

REMARKS

Entry of the foregoing, reexamination and further and favorable reconsideration of the subject application pursuant to and consistent with 37 C.F.R. § 1.112, are respectfully requested. Support for the amendment to claims 1 and 2 may be found, at the very least, on page 15, lines 32-35, of the specification as filed. Support for new claim 29 may be found, at the very least, on page 10, lines 33-34, of the specification as filed. No new matter has been added by the present amendment.

Rejection of Claims 1, 2, 7-12 and 20-23 Under 35 U.S.C. § 112, First Paragraph

Claims 1, 2, 7-12 and 20-23 have been rejected under 35 U.S.C. § 112, first paragraph, for purportedly containing subject matter not described in the specification in such a way as to convey to one of skill in the art that the inventors had possession of the claimed invention at the time the application was filed. According to the Examiner, there is no support in the specification for the phrase "which has not been previously extracted." For at least all of the reasons set forth below, withdrawal of this rejection is believed to be in order.

As stated in applicants last reply, the specification distinguishes between "hops" and "hop extract" and thus it is believed to be clear that the hops has not previously been extracted. Otherwise, it would fall within the scope of a "hop extract," and thus the method would include extracting a hops extract, which is clearly not the invention of the present invention. As can be seen on page 1, lines 25-31, of the specification as filed, raw hops used for the manufacture of beer are stored in the form of whole hops which have been dried after harvesting, or further processed hop flour, hop pellets, etc. As can be seen on page 10, lines

33-36, of the specification as filed, it is the raw whole hops, hop flour, hop pellets and the like which are then used in the methods of the present invention. Thus, it is clear that the hops has not previously been extracted since they are in the raw form prior to being used in the method of the present invention, and one of ordinary skill in the art would interpret the term "hops" as such.

In light of these remarks, applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 112, first paragraph.

Rejection of Claims 1, 2, 7-12 and 19-28 Under 35 U.S.C. § 112, Second Paragraph

Claims 1, 2, 7-12 and 19-28 have been rejected under 35 U.S.C. § 112, second paragraph, for purportedly being indefinite. According to the Examiner, the phrase "essential oil components" in claims 1-2 is unknown. For at least all of the reasons set forth below, withdrawal of this rejection is believed to be in order.

In the Reply and Amendment filed on June 20, 2000, claims 1 and 2 were amended to remove the term "essential oil components" and replace it with "essential oil." Presently, claims 1 and 2 have been further amended to recite "essential oil content." One of skill in the art would recognize what "essential oils" are, and the specification defines the essential oil as the component of hops which provides its aroma. *See, e.g.*, page 2, lines 3-7, of the specification as filed. The specification further teaches how to measure the essential oil content in the hops at page 15, lines 32-35. The Encyclopedia of Beer, cited in the Official Action also shows that the term "essential oils" is well recognized in the art (*see, e.g.*, page 251). Therefore, the term "essential oil content" is clear and definite.

In light of these remarks, withdrawal of this rejection under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Rejection of Claims 1 and 2 Under 35 U.S.C. § 103(a)

Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a) for purportedly being unpatentable over Haeffner et al (U.S. Patent No. 5,011,594). For at least all of the reasons set forth below, withdrawal of this rejection is believed to be in order.

Haeffner et al does not render obvious applicants' claimed invention. This reference neither discloses nor suggests the specific extraction conditions recited in applicants' claims. The Examiner cites column 1, lines 31-34, of Haeffner et al (wherein U.S. Pat. No. 4,104,409 is cited) as disclosing that it is well known in the art to treat whole hops using super critical carbon dioxide. However, neither the '409 patent nor Haeffner et al disclose or suggest the specific extraction conditions recited in applicants' claims, and thus neither of these patents would disclose or suggest a process wherein an essential oil-rich hop extract is produced.

In light of these remarks, applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 103(a).

Rejection of Claims 1, 2 and 7-28 Under 35 U.S.C. § 103(a)

Claims 1, 2, and 7-28 have been rejected under 35 U.S.C. § 103(a) for purportedly being unpatentable over ANH (B.E. Pat. No. 197012) in view of Krasd Food (S.U. Pat. No. 1601112). For at least all of the reasons set forth below, withdrawal of this rejection is believed to be in order.

ANH allegedly teaches a process for the use of spent hops to produce a wort and subsequent beer. Krasd Food allegedly discloses using the waste from a CO₂ extraction process along with the CO₂ extract in the production of wort. The Official Action asserts that it would have been obvious to use a CO₂ extract as in Krasd Food in the process of ANH as CO₂ extracts are well known and used.

Contrary to the Official Action, ANH and Krasd Food are unrelated to the instantly claimed invention. ANH describes the combined use of hop resin and dried and powdered hop residue. Hop resin is different from essential oil in hops. The hop resin is used in the ANH reference to add a bitter taste to beer. By contrast, according to applicants' invention, the bitter taste will be decreased and the aroma will be improved. The α -acids give beer the bitter taste, while essential oils impart the aroma of beer. *See*, page 2, lines 6-7 of the specification. By teaching how to add a bitter taste to beer, ANH is unrelated to the instant claims directed to increasing the ratio of essential oils to α -acids in hops extract, and the use of such extract. ANH thus fails to disclose a "process for production of an essential oil-rich hop extract," as instantly claimed. Nor does it describe processes which employ such essential oil-rich hop extracts.

Krasd Food fails to overcome or remedy this deficiency in ANH. Krasd Food relates to the addition of a hop extract, etc., to wort. Krasd Food is also unrelated to the production of an essential oil-rich hop extract and fails to overcome or remedy this deficiency in ANH.

Neither of the cited references, alone or in combination, discloses or even suggests a process for production of an essential oil-rich hop extract, wherein the hops is extracted with supercritical or subcritical carbon dioxide solvent. Both of the cited references relate to "waste

spent hops” and fail to disclose extraction of hops *per se*, which is what is recited in the process of applicants’ claims.

Nor does either of the references disclose or even suggest a process wherein hops is extracted with supercritical or subcritical carbon dioxide solvent or the use of specific extraction and separation pressures in a process for producing a hop extract having an increased ratio of essential oil to α -acids as instantly claimed. There is no recognition in either reference that by extracting hops with supercritical or subcritical carbon dioxide solvent at the claimed pressure and then separating the hop extract from the carbon dioxide extract an increased ratio of essential oil to α -acids could be obtained. Nor does the cited art teach the use of a hop extract produced by such a process.

In view of the above, withdrawal of the rejection of the claims under §103(a) is respectfully requested. Such action is believed to be in order.

In view of the above, further and favorable action in the form of a Notice of Allowance is respectfully requested. Such action is believed to be in order.

In the event that there are any questions relating to this amendment, or to the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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TC 1700



Application No. 08/693,499
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Page 1

Attachment to Amendment and Reply dated September 21, 2001

Marked-up Claims 1-2

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TC 1700

1. (Four Times Amended) A process for production of an essential oil-rich hop extract, comprising the steps of:

(1) extracting hops which has not previously been extracted with supercritical or subcritical carbon dioxide solvent at a pressure of 80 to 100 kg/cm² to obtain a carbon dioxide extract; and

(2) separating an essential oil-rich hop extract from the carbon dioxide extract, wherein the ratio of essential oil content (ml) to α -acid (g) in the extracted hops is increased by at least 2.

2. (Five Times Amended) A process for production of an essential oil-rich hop extract, comprising the steps of:

(1) extracting hops which has not previously been extracted with supercritical or subcritical carbon dioxide solvent at an extraction pressure of higher than 100 kg /cm² to obtain a carbon dioxide extract;

(2) separating bitter components from the carbon dioxide extract at a pressure between 100 kg/cm² and said extraction pressure; and then

(3) separating an essential oil-rich hop extract from the carbon dioxide extract at a pressure of 2 lower-than 100 kg/cm² ,

Attachment to Amendment and Reply dated September 21, 2001

Marked-up Claims 1-2

wherein the ratio of essential oil content (ml) to α -acid (g) in the extracted hops is increased
by at least 2.